



101 642 567  
Dec 08 2003



INVESTOR IN PEOPLE

The Patent Office  
Concept House  
Cardiff Road  
Newport  
South Wales  
NP10 8QQ

I, the undersigned, being an officer duly authorised in accordance with Section 74(1) and (4) of the Deregulation & Contracting Out Act 1994, to sign and issue certificates on behalf of the Comptroller-General, hereby certify that annexed hereto is a true copy of the documents as originally filed in connection with the patent application identified therein.

In accordance with the Patents (Companies Re-registration) Rules 1982, if a company named in this certificate and any accompanying documents has re-registered under the Companies Act 1980 with the same name as that with which it was registered immediately before re-registration save for the substitution as, or inclusion as, the last part of the name of the words "public limited company" or their equivalents in Welsh, references to the name of the company in this certificate and any accompanying documents shall be treated as references to the name with which it is so re-registered.

In accordance with the rules, the words "public limited company" may be replaced by p.l.c., plc, P.L.C. or PLC.

Re-registration under the Companies Act does not constitute a new legal entity but merely subjects the company to certain additional company law rules.



Signed

Dated

19 August 2003





1/77  
20AUG02 EZ42165-1 D02624  
P01/7700 0:00-0219317.5

# Request for grant of a patent LONDON

(See the notes on the back of this form. You can also get an explanatory leaflet from the Patent Office to help you fill in this form)

The Patent Office

Cardiff Road  
Newport  
South Wales  
NP9 1RH

1. Your reference

JC/SPY

2. Patent application number

(The Patent Office will fill in this part)

0219317.5

19 AUG 2002

3. Full name, address and postcode of the or of each applicant (underline all surnames)

Stefan KNOX

2 Goffs Cottage,  
London Road,  
Northchapel,  
West Sussex,  
GU28 9EQ

Patents ADP number (if you know it)

If the applicant is a corporate body, give the country/state of its incorporation

GB

08447842001

4. Title of the invention

Device for measuring the speed of an object

5. Name of your agent (if you have one)

"Address for service" in the United Kingdom to which all correspondence should be sent (including the postcode)

J.C. BRIDGE-BUTLER

G.F. REDFERN & CO.  
7 Staple Inn,  
Holborn,  
London WC1V 7QF

Patents ADP number (if you know it)

1412002

6. If you are declaring priority from one or more earlier patent applications, give the country and the date of filing of the or of each of these earlier applications and (if you know it) the or each application number

Country

Priority application number  
(if you know it)

Date of filing  
(day / month / year)

7. If this application is divided or otherwise derived from an earlier UK application, give the number and the filing date of the earlier application

Number of earlier application

Date of filing  
(day / month / year)

8. Is a statement of inventorship and of right to grant of a patent required in support of this request? (Answer 'Yes' if:

- a) any applicant named in part 3 is not an inventor, or
- b) there is an inventor who is not named as an applicant, or
- c) any named applicant is a corporate body.

See note (d))

Patents Form 1/77

9. Enter the number of sheets for any of the following items you are filing with this form. Do not count copies of the same document

Continuation sheets of this form

Description

7

Claim(s)

Abstract

Drawing(s)

2 + 2

10. If you are also filing any of the following, state how many against each item.

Priority documents

Translations of priority documents

Statement of inventorship and right to grant of a patent (Patents Form 7/77)

Request for preliminary examination and search (Patents Form 9/77)

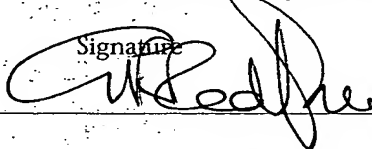
Request for substantive examination (Patents Form 10/77)

Any other documents (please specify)

11.

I/We request the grant of a patent on the basis of this application.

Signature



Date

19 August 2002

12. Name and daytime telephone number of person to contact in the United Kingdom

J.C. BRIDGE-BUTLER

020 7242 7680

**Warning**

After an application for a patent has been filed, the Comptroller of the Patent Office will consider whether publication or communication of the invention should be prohibited or restricted under Section 22 of the Patents Act 1977. You will be informed if it is necessary to prohibit or restrict your invention in this way. Furthermore, if you live in the United Kingdom, Section 23 of the Patents Act 1977 stops you from applying for a patent abroad without first getting written permission from the Patent Office unless an application has been filed at least 6 weeks beforehand in the United Kingdom for a patent for the same invention and either no direction prohibiting publication or communication has been given, or any such direction has been revoked.

**Notes**

- If you need help to fill in this form or you have any questions, please contact the Patent Office on 0645 500505.
- Write your answers in capital letters using black ink or you may type them.
- If there is not enough space for all the relevant details on any part of this form, please continue on a separate sheet of paper and write "see continuation sheet" in the relevant part(s). Any continuation sheet should be attached to this form.
- If you have answered 'Yes' Patents Form 7/77 will need to be filed.
- Once you have filled in the form you must remember to sign and date it.
- For details of the fee and ways to pay please contact the Patent Office.

## Device for measuring the speed of an object

The present invention relates to a device for measuring the speed of an object, for use particularly, but not exclusively, for measuring the speed of an object used in a sports game.

Many sports are based on the movement of an object, most commonly a ball. Recent technology has allowed the speed at which these balls travel to be known. This provides an added interest for both the players and the viewers, for example, the fastest serve in Tennis, or the fastest pitch in Baseball.

The technology used to record the speed of a ball is based on measurements taken as the ball passes through space, for example with a known type of infrared or laser "speed gun". This kind of technology is sophisticated and expensive, and is therefore not available to the amateur enthusiast.

Further, this equipment may require a user who is not participating in the game who can aim the device at the moving ball.

The present invention is intended to provide an alternative approach.

According to the present invention a measuring device comprises pressure measuring means adapted to be fitted to a first sports implement and further adapted to record the contact pressure between the first sporting implement and a second sports implement, processing means to calculate from the pressure recorded, the speed at which the second sports implement was travelling before and/or

after it impacted the pressure measuring means, and means to communicate the speed calculated.

In a first construction the first sports implement can be a striking object, for example a football boot, and the second sports implement can be an object which is struck, for example a football ball. It will be appreciated that with this arrangement it is the speed of the ball after it was struck by the boot which is displayed.

In an alternative construction the first sports implement can be an object which is struck, for example a baseball glove, and the second sports implement can be a striking object, for example a baseball ball. It will be appreciated that with this arrangement it is the speed of the ball before it was caught by the glove which is displayed.

The pressure measuring means can be a transducer sensor of a known type, which is adapted to provide an electrical signal to the processing means which corresponds to the pressure recorded when the two sports implements collide.

The processing means can be an electronic circuit constructed from known materials and to a known formula. The circuit can be programmable, so it can be provided with information about the physical properties of the first and/or the second sports implement in order to accurately calculate a speed from the impact pressure recorded.

The communication means can be a visual display, which is provided on the measuring device. The visual display can be a liquid crystal display. In an alternative construction the communication means can be an audio

signal, for example a recording of a voice speaking the speed recorded.

The communication means can also be provided on a second base, connected to the processing means by a remote signal. In one construction the communications means can be provided on a watch, which can either display, or audibly communicate the speed calculated once the remote signal is sent to it.

The processing means and/or the LCD can be provided on the opposite side of the device to the transducer, and therefore the opposite side of the sports implement to the side of impact.

The invention can be performed in various ways but two examples will now be described by way of example and with reference to the accompanying drawings in which:

Figure 1 is a perspective view of the component parts of a measuring device according to the present invention;

Figure 2 is a perspective view of the device shown in Figure 1;

Figure 3 is a perspective view of the device shown in Figure 2 fitted to a football boot,;

Figure 4 is a perspective view of a second measuring device according to the present invention;

Figure 5 is a perspective view of the device shown in Figure 4 fitted to a baseball glove; and,

Figure 6 is a further perspective view of the device shown in Figure 4 fitted to a baseball glove.

In Figures 1, 2, and 3 a measuring device 1 is adapted to be fitted to a football boot 2. The device 1 comprises a transducer sensor 3 which is adapted to record the contact pressure between the football boot 2 and a football (not shown), an electronic circuit board 4 adapted to calculate from the pressure recorded by the transducer 3 the speed at which a football was travelling after it was struck by the boot 2, and an LCD display 5 to display the speed calculated.

The device 1 further comprises a base 6, a foot strap 7, a heel strap 8, a housing 9 and a resilient outer cover 10. The transducer 3 is secured to the base 6, and is provided with a cover 11. The outer cover 10 is secured on the base on top of the transducer 6. The housing 9 comprises a base 12 and an outer cover 13. The circuit board 4, the LCD display 5 and a battery 14 are contained within the housing 9. The base 12 is provided with an opening 15 and a removable cover 16, through which the battery 14 can be removed and/or replaced. The housing 9 is secured to the heel strap 8, and the heel strap 8 and the foot strap 7 are secured to the base 6 by means of pivot joints 17 and 18.

The transducer 6 is disposed in an off-set position on the base 6, which corresponds to the spot where a football is traditionally struck by a football boot.

As shown in Figure 3 the device 1 is fitted to a football boot 2 by placing the base 6 on the upper 19 of the boot 2, and placing the foot strap 7 around the body 20 of the boot 2, and the heel strap 8 around the heel 21 of



the boot 2.- The device 1 can be provided with an operating switch (not shown) to turn it on.

In use the operator fits the device 1 to their football boot, and switches it on. They then strike a football in the traditional manner. As a result the transducer 3 is placed under a contact pressure and a measurement is taken. This measurement is sent to the electronic circuit board 4 via insulated wire 22 (as shown in Figure 1). The circuit board is programmed to translate the pressure recorded into a speed according to a programmed formula, and the result is then displayed on the LCD display 5. It will be appreciated that the speed recorded will only be accurate if the resilience of the ball corresponds to the information about the ball which has been programmed into the circuit 4. It will be further appreciated that the device 1 will only provide an accurate reading if the ball is struck by the portion of the boot 2 adjacent to the transducer 3.

To assist in the accurate use of the device 1 a pattern 23 is displayed on the outer cover 10 which shows where a ball should be struck by the foot.

As shown in Figure 3 the housing 9 is on the opposite side of the boot to the striking area 24. With this arrangement the housing 9 will not be damaged when the boot comes into contact with the ball.

It will be appreciated that the above described device 1 can be adapted to be used with any sporting implement which is used to strike another sporting implement, without departing from the invention.

In Figures 4, 5 and 6 a measuring device 25 is adapted to be fitted to a baseball glove 26. The device 25 comprises a transducer sensor (not visible) which is adapted to record the contact pressure between the glove 26 and a baseball ball (not shown), an electronic circuit board (not visible) adapted to calculate from the pressure recorded by the transducer the speed at which a ball was travelling before it was caught by the glove 26, and an LCD display 27 to display the speed calculated.

The device 25 operates in substantially the same way as device 1 shown in Figures 1, 2 and 3. The device 25 comprises a base 28, upon which the transducer is mounted, and covered by an outer cover 29. A housing 30 is provided which contains the circuit board, battery and LCD display 27 required to operate the invention.

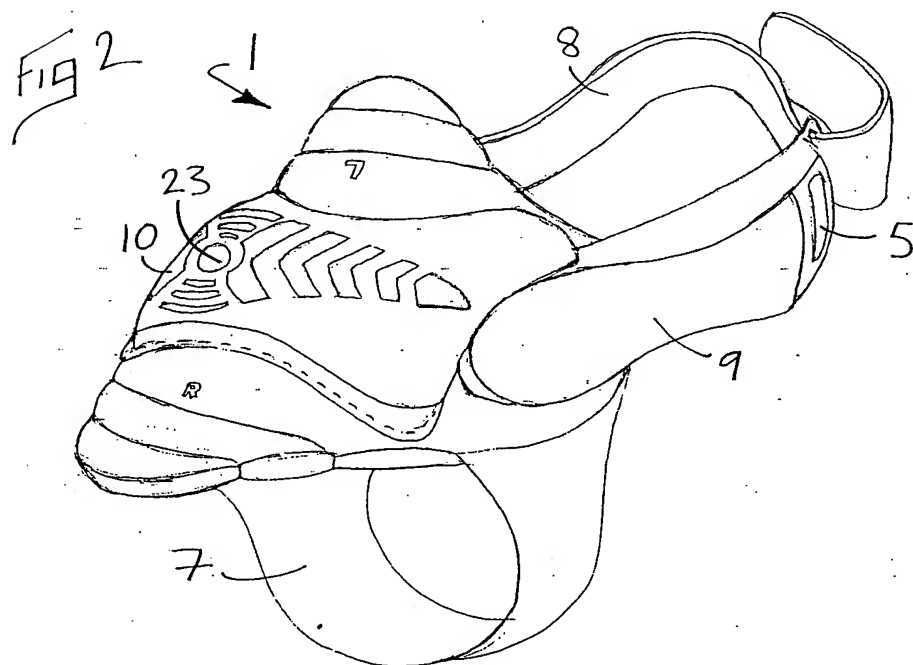
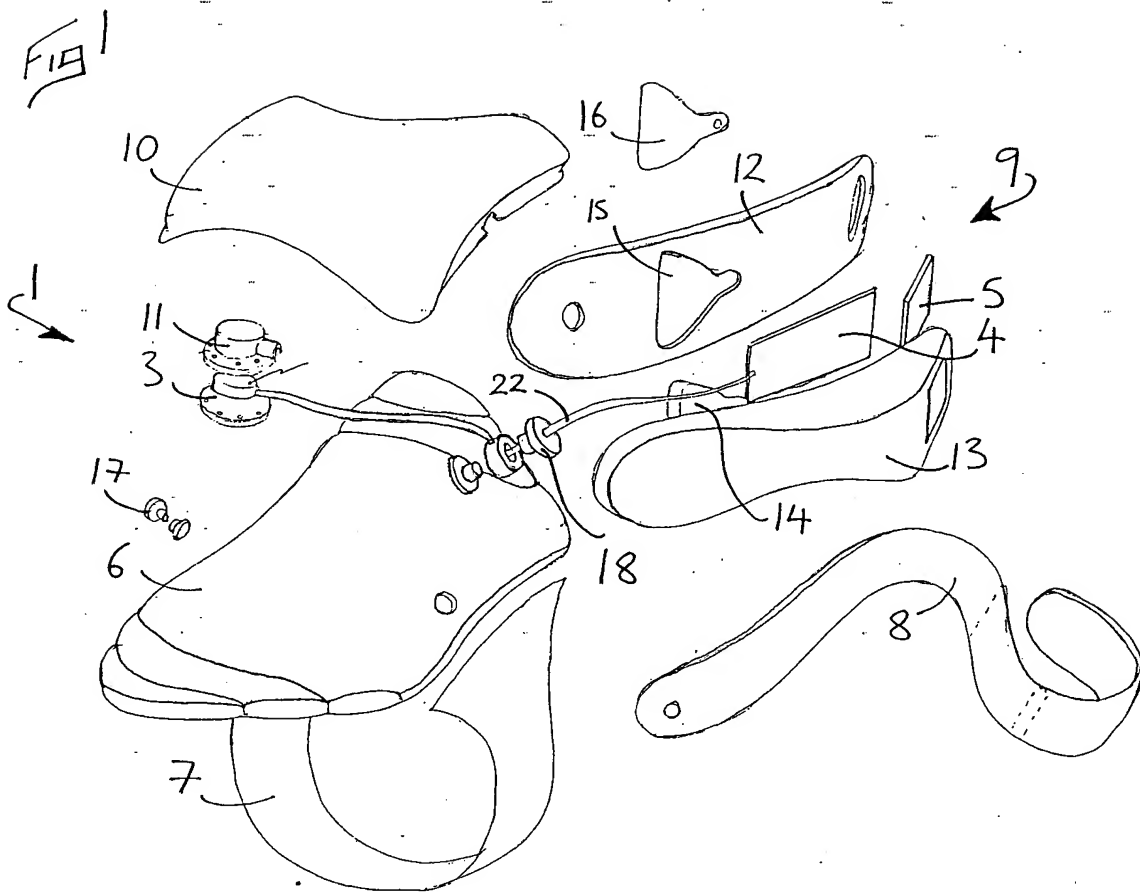
In use the device 25 is fitted to a glove 26 by means of straps 31. The housing 30 is secured to the rear of the wrist portion 32 of the straps 31. The user activates the device 25 by means of switch 33, then catches a flying ball. The contact pressure recorded by the transducer is then sent to the circuit, and a speed is calculated and displayed on the LDC display.

As shown in Figure 6 the housing 30 is on the opposite side of the glove to the ball catching area, so it will not be damaged in use.

It will be appreciated that the above described device 25 can be adapted to be used with any sporting implement which is used to stop or catch another sporting implement, without departing from the invention.

Thus a device is provided which is cheap to manufacture and to purchase, and which can be used to calculate the speed of sporting implements without the need for a third party using a separate measuring device.







7

•

•

